REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) NPRDC TR 87- 22	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Navy Personnel Research and Development Center 6b. OFFICE SYMBOL (*If applicable*) Code 61	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (*City, State, and ZIP Code*) San Diego, CA 92152-6800	7b. ADDRESS (*City, State, and ZIP Code*)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION Navy Program Planning Office Program Resource Appraisal Div. 8b. OFFICE SYMBOL (*If applicable*) OP-914	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (*City, State, and ZIP Code*) Pentagon Washington, DC 20350	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. WR35107 / TASK NO. / WORK UNIT ACCESSION NO.
11. TITLE (*Include Security Classification*) NEC-Related "C" School Planning	
12. PERSONAL AUTHOR(S) Ganeshan, Jaya	
13a. TYPE OF REPORT Final 13b. TIME COVERED FROM 85 Jul TO 85 Sep 14. DATE OF REPORT (*Year, Month, Day*) 1987 April 15. PAGE COUNT 32	
16. SUPPLEMENTARY NOTATION See also: An Investigation of NEC Utilization (NPRDC TR 87-13)	

17. COSATI CODES			18. SUBJECT TERMS (*Continue on reverse if necessary and identify by block number*)
FIELD	GROUP	SUB-GROUP	
05	09		"C" school planning, enlisted personnel assignment, NEC-related training

19. ABSTRACT (*Continue on reverse if necessary and identify by block number*)

"C" school training is required for about 65 percent of all Navy Enlisted Classifications (NECs). NECs supplement the rating structure by identifying personnel with special knowledge and skills. This report describes the Navy's "C" school planning process and the execution of the "C" school plan. Problems resulting in discrepancies between "C" school plans and actual school use are detailed. These problems include inaccurate personnel data, inadequate planning methodologies, and plan execution deficiencies. Finally, the report outlines a proposed "C" school planning system designed to overcome many of the problems identified.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL Pinciaro, Susan	22b. TELEPHONE (*Include Area Code*) (619) 225-7388 22c. OFFICE SYMBOL Code 61

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted. All other editions are obsolete.

Navy Personnel Research and Development Center
San Diego, CA 92152-6800 TR 87-22 April 1987

NEC-Related "C" School Planning

NPRDC TR 87-22

April 1987

NEC-Related "C" School Planning

Jaya Ganeshan

Reviewed by
Murray Rowe
Susan Pinciaro

Approved by
Joe Silverman
Director, Manpower Systems Department

Released by
B. E. Bacon
Captain, U.S. Navy
Commanding Officer

and

J. S. McMichael, Ph.D.
Technical Director

Navy Personnel Research and Development Center
San Diego, California 92152-6800

FOREWORD

This report was prepared as part of work unit WR 35107 ("C" School Planning) in response to a request by the Director, Program Resource Appraisal Division of the Navy Program Planning Office (OP-914). The increase in specialized skill training costs despite consistently high retention of trained personnel precipitated an investigation of the management of Navy "C" school resources. This report describes the NEC-related "C" school planning process and the execution of "C" school plans through personnel distribution. The report also summarizes many of the problems that plague "C" school planning and plan execution.

Appreciation is expressed to the individuals working for the Deputy Chief of Naval Operations (Manpower, Personnel, and Training, OP-01) and to those in the Naval Military Personnel Command (NMPC) who were interviewed in conjunction with this effort and reviewed preliminary drafts of this report.

B. E. BACON
Captain, U.S. Navy
Commanding Officer

J. S. McMICHAEL
Technical Director

SUMMARY: NEC-RELATED "C" SCHOOL PLANNING

"C" school training is required for about 65 percent of Navy Enlisted Classifications (NECs). NECs supplement the rating structure by identifying personnel who have special knowledge and skills. Often, planned "C" school input does not match the Navy's need for advanced skills. For example, in Fiscal Year (FY) 1984, 22 percent of the schools trained less than 50 percent of their quotas, and 18 percent trained more than 110 percent. The discrepancies between plans and needs are attributable to problems with the data that are available for planning, and related flaws in the planning method and the personnel assignment process. This report describes the Navy's "C" school planning process and the execution of the "C" school plan. Problems with the development and execution of the plan are examined.

An Overview of the Planning System

"C" school planners must forecast school requirements 3 years in advance. The methodology assumes training will be required for one-third of an NEC's billets annually. These early estimates are then revised according to equipment changes, rating-level inventory trends, school capacities, and training funds. Information about projected changes comes from enlisted community managers, resource sponsors, training agents, and training commands. The "final" plan can be changed again during its execution, in response to actual needs for "C" school seats and class schedules.

Data Problems

Frequently, school plans do not meet training needs, because of deficiencies in the personnel data needed for planning. Inaccuracies in billet files and Enlisted Master Records (EMRs) used in early planning account for several problems. Grade, rate, and NEC information are often not on the billet file when plans are made. EMRs often contain inaccurate and/or incomplete NEC qualifications and do not reflect personnel transfers within an activity. Equipment changes not reflected in a ship's billets also result in erroneous requirements.

Inadequate Planning Method

The current method for projecting out-year NEC inventories does not incorporate information about continuation behavior, qualification rates, effective NEC sea/shore rotation ratios, and school attrition. Data on the number of personnel having the training prerequisites are also not part of the method. Without an accounting for these factors, accurate results are unlikely.

Assignment Problems

The same inaccuracies on the billet file and the EMR that make planning difficult also hinder assignments to schools and to billets requiring NECs. Detailers face two additional problems when trying to match personnel skills to jobs with NEC requirements. First, they cannot always reuse an individual's NEC. Second, they may be unable to locate a school seat for a rotating individual otherwise qualified for training.

Recommendations for an Improved "C" School Planning System

A proposed planning system would contain a centralized planning data base supplying information to other system components. The data base would include authorizations, inventories, school capacities, school utilization, NEC utilization, and historical "C" school plans. The system would also have planning models to identify initial "C" school requirements and then build the final school plan. The planning system would provide: (1) standard, consistent use of data from multiple sources, (2) streamlined, computer-based methods for preparing a defensible "C" school plan, and (3) automated planning feedback.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

This report describes the management of Navy advanced skill training that is done in "C" schools. Specifically, it focuses on those "C" schools that award a Navy enlisted classification (NEC), and describes "C" school planning and plan execution through enlisted personnel distribution. It also summarizes many of the deficiencies that plague the current "C" school planning process and plan execution.

Recently, several training management issues have received high-level attention. Among these is why "C" school training costs have increased despite consistently high retention of trained personnel.[1] In addition, a September 1985 report by the General Accounting Office (GAO) asserts that the Navy's processes for determining annual school enrollment requirements "often overstate requirements and result in the inefficient use of Training Command resources (U.S. General Accounting Office, 1985)." Given the high cost for "C" school training, estimated at $600 million annually (Angier, 1985), the GAO report explicitly calls for an evaluation of organizational relationships that affect the "C" school planning process. One response has been a body of "C" school research, including this effort. Ganeshan and Rowe (1987) investigates the extent to which enlisted personnel with NECs are assigned to jobs requiring those specific skills. The Center for Naval Analyses has also published two research memoranda on specialized skill training (Quester & Corliss, 1986; Quester, Byrnes, Corliss, Dorsey, Hill, & Schoeck, 1986).

"C" SCHOOLS AND NAVY ENLISTED CLASSIFICATIONS

Typically, "C" schools provide specialized skill classroom training. Successful completion of many courses results in the award of an NEC. NECs identify special knowledge and skills when the rating structure itself is insufficient for manpower management purposes.

"C" Schools

"C" schools train Navy officers and enlisted personnel plus some members of the Navy reserve, other armed services, the civilian workforce, and foreign national communities. There are two types of "C" schools: those that award NECs (over 1,000 courses) and those that do not.[2]

---

[1] A 5 July 1984 Vice Chief of Naval Operations (VCNO) Memorandum ("CNO Executive Board (CEB) Decision Memorandum on Education and Training") addresses issues raised in the 30 May 1984 CEB briefing on training. During the briefing, the Chief of Naval Operations (CNO) stated that "the Navy must do a better job explaining why near-term training costs are not falling in light of better retention."

[2] Non-NEC "C" schools (2,383 courses) offer specialized training but do not result in the award of an NEC. Students are usually sent to these courses from Fleet units. Examples of non-NEC related courses are Aviation Work Center Supervisor, Aviation Maintenance Control, Aviation Quality Insurance, and Aviation Maintenance Material Control. The Training Policy Programs Branch (OP-112) distributes a plan for non-NEC related "C" school use by the Naval Reserve, other armed services, civilians, and foreign nationals. No formal plan is produced for active duty Navy input to non-NEC related "C" schools. Instead, schoolhouses estimate this input.

By definition, "C" school training is any specialized skill training longer than 13 days. NEC-related training requiring fewer than 13 days is also considered "C" school training. Non-NEC related training requiring fewer than 13 days is classified as functional training (e.g., refresher training). The distinctions are summarized in Figure 1.

	DURATION	
	≤13 DAYS	≥13 DAYS
NEC AWARDED	"C" SCHOOL TRAINING	"C" SCHOOL TRAINING
NO NEC AWARDED	FUNCTIONAL TRAINING	"C" SCHOOL TRAINING

Figure 1. Defining "C" school training.

About one-third of all "C" schools are NEC-producing schools. These schools provide training which satisfies NEC classroom training requirements. NEC feeder schools provide prerequisite training for NEC-producing schools or are part of an NEC training pipeline. For example, four individual 1-week training courses are required to qualify a DD-963 Auxiliary Systems Repairman (Engineman series, NEC 4398). The courses may be taken in any order. Alone, none of these courses produces an NEC. Figure 2 illustrates different "C" school paths leading to three hypothetical NECs, labelled 1, 2, and 3.

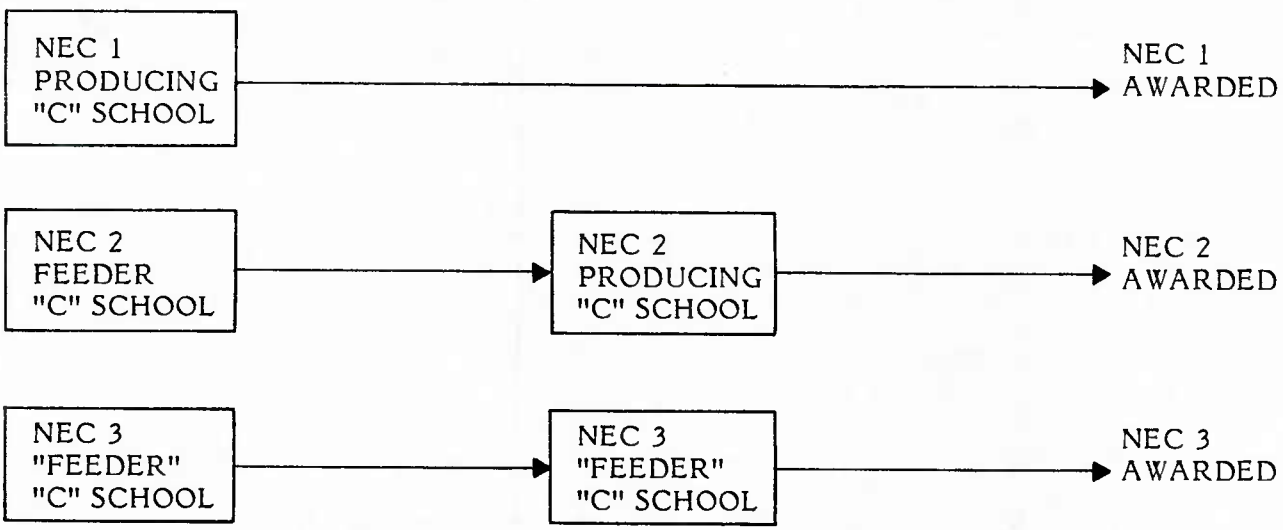

Figure 2. "C" school paths to NEC awards.

Navy Enlisted Classifications (NECs)

An NEC supplements the enlisted rating structure in identifying personnel and billets. Rating Series NECs relate to specific enlisted ratings and identify special skills that are not common to all personnel and paygrades within the rating. (For example, NEC 1422 indicates that an Electronics Technician is qualified to maintain UCC-1 communications equipment.) Special Series NECs are principal skill identifiers for distribution purposes. These NECs are not related to any particular rating but instead identify specialized skills of communities such as Navy Divers, Drug Abuse Counselors, and Security Guards.[3]

Some NECs may require that other NECs, called component NECs, be earned before the principal NEC is awarded. For example, an AT-6652 NEC qualifies an Aviation Electronics Technician (AT) to operate specific, computerized automatic test equipment. An AT-6653 NEC qualifies a technician to perform in-depth maintenance on the same equipment. Since an individual must have an AT-6652 to receive an AT-6653 award, AT-6652 is a component NEC for AT-6653.

There are currently 1037 NECs. Table 1 categorizes these NECs according to type of training. NEC-producing classroom training is done primarily in Navy "C" schools. Some classroom training is done in schools run by other services. As changes in Navy specialized skill requirements occur, old NECs are phased out and new ones are developed. There are currently 114 NECs under development. As the data in Table 2 show, the number of NECs changes over time.

Both men and women are eligible for 811 NECs, while 226 NECs are restricted to men only. Approximately 20 percent of "C" school entrants are initial accessions (E-3s and E-4s), while about 80 percent are Fleet returnees. The exception is in the submarine community, where almost all "C" school entrants come directly from "A" school or submarine school. A comprehensive list of the NECs and the courses required to earn them is included in the NEC manual (U.S. Department of the Navy, NAVPERS 18068D, 1986) and is updated quarterly.

OVERVIEW: FROM PLANNING TO PERSONNEL ASSIGNMENT FOR NEC-RELATED "C" SCHOOLS

The "C" school planning, scheduling, and assignment processes hinge on four components: the planning, training, and personnel distribution organizations, and the underlying personnel data (see Figure 3). Data on billets come from the Navy Manpower Data Accounting System (NMDAS) billet file (maintained by the Manpower Authorization Branch). Data on personnel inventories come largely from the Enlisted Master Record (EMR), maintained by the Enlisted Applications Branch of the Management Information Systems Division (NMPC-1652). Planners decide how many individuals will go to "C" school to be trained in each NEC. The Deputy Chief of Naval Operations (Manpower, Personnel, and Training; OP-01) builds the training plans. The resource sponsors contribute information to OP-01 during the planning process. "C" school training is

[3] A third type of NEC, called an Entry Series NEC, consists of Rating Conversion and Occupational Area-Defense Groupings NECs. These identify personnel in training for a change in rating and personnel who have received training, are in training, or have an aptitude for training in Department of Defense occupations. The NEC-related "C" school plan does not include requirements for Entry Series NECs.

scheduled and operated by the training agents and the functional training commands.[4] The detailers in Navy Military Personnel Command's (NMPCs) Distribution Department (NMPC-4) assign personnel. They send individuals to "C" school and on to duty stations requiring specialized skills.

Table 1

NEC Training Requirements

Type of Training	Number of NECs	Percent of Total
Classroom	675	65.1
Classroom and On-the-Job Training (OJT)	39	3.8
Classroom or OJT	181	17.5
Factory	4	---
OJT only	72	6.9
Other[a]	66	6.4

Source: OP-132H1

[a]This category includes NECs awarded for special experience qualifications, not for formal classroom training or OJT. For example, Boatswain's Mate NEC 0114, Shipboard Stevedoring Aboard Merchant Vessels, is earned after 1 year of experience in a Mobile Cargo Handling Unit or a Reserve Cargo Handling Battalion. Senior and Master Naval Parachutists (NECs 7352 and 7354) are awarded based on duty and on parachute jumps and special equipment use.

[4]OPNAV Instruction 1500.44A covers responsibilities for development of personnel training requirements and related plans. It defines a resource sponsor as a "Deputy Chief of Naval Operations (DCNO) or Director of a Major Staff Office (DMSO) who generates operational requirements which necessitate expanded, reduced, or revised training, and who is also responsible for resources related to generated requirements." Resource sponsors include OP-01, OP-02, OP-03, OP-05, OP-09B, OP-09R, OP-093, OP-094, OP-095, OP-098, and OP-009. 1500.44A defines a training agency as "an office, bureau, command, or headquarters exercising command of and providing support to some major portion of the Navy's formalized training effort." Training agents include the Chief of Naval Education and Training; the Naval Medical Command; the Naval War College; the U.S. Naval Academy; the Commander in Chief, U.S. Pacific Fleet; the Commander in Chief, U.S. Atlantic Fleet; and the Chief of Naval Reserve. A functional training command is an activity whose primary mission is to conduct training (i.e., a schoolhouse).

Table 2

Number of Rating Series and Special Series NECs, by Year

Series	Year					
	1980	1981	1982	1983	1984	1985
Rating	913	895	893	920	919	962
Special	105	102	99	66	66	71
Total	1,018	997	992	986	985	1,033[a]

Source: NMPC-51

[a]This number differs from the earlier total (1,037) because it reflects the number of NECs at the end of a different quarter.

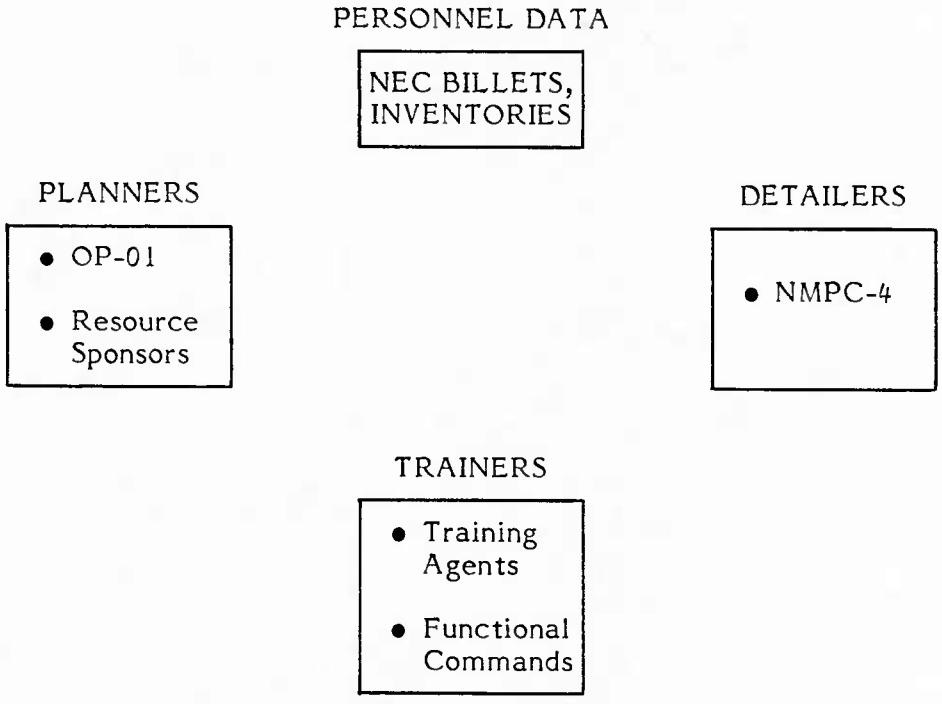

Figure 3. Components of the "C" school planning and execution process.

In order for the Navy to have sufficient "C" school training funds for a fiscal year, say FY89, an assessment of training requirements began in July 1986. Between July 1986 and June 1987, OP-01 will be preparing a detailed input plan for NEC-producing "C" schools, showing the number of students to be trained for each NEC in FY89. As Figure 4 illustrates, the input plan is based on information from more than one source. OP-01 forecasts initial training requirements by comparing projected force requirements to personnel inventories (① in Figure 4). The training agents and commands use these training requirements (②) to estimate school capacities (③). OP-01 builds final "C" school plans by constraining the original training requirements by school capacities. OP-01 sends the plan to the training agents and commands (④). They produce school convening schedules for the planned numbers of students. School schedules will be completed by January 1987. To make school assignments in FY89 (⑦), NMPC detailers combine class quota and scheduling information (⑥) with information on billets to be filled and on personnel who are available to fill them (⑤). Finally, personnel assignments are made and the personnel data files are updated (⑨).

To describe planning, scheduling, and assignment in more detail, the following sections concentrate on specific portions of Figure 4.

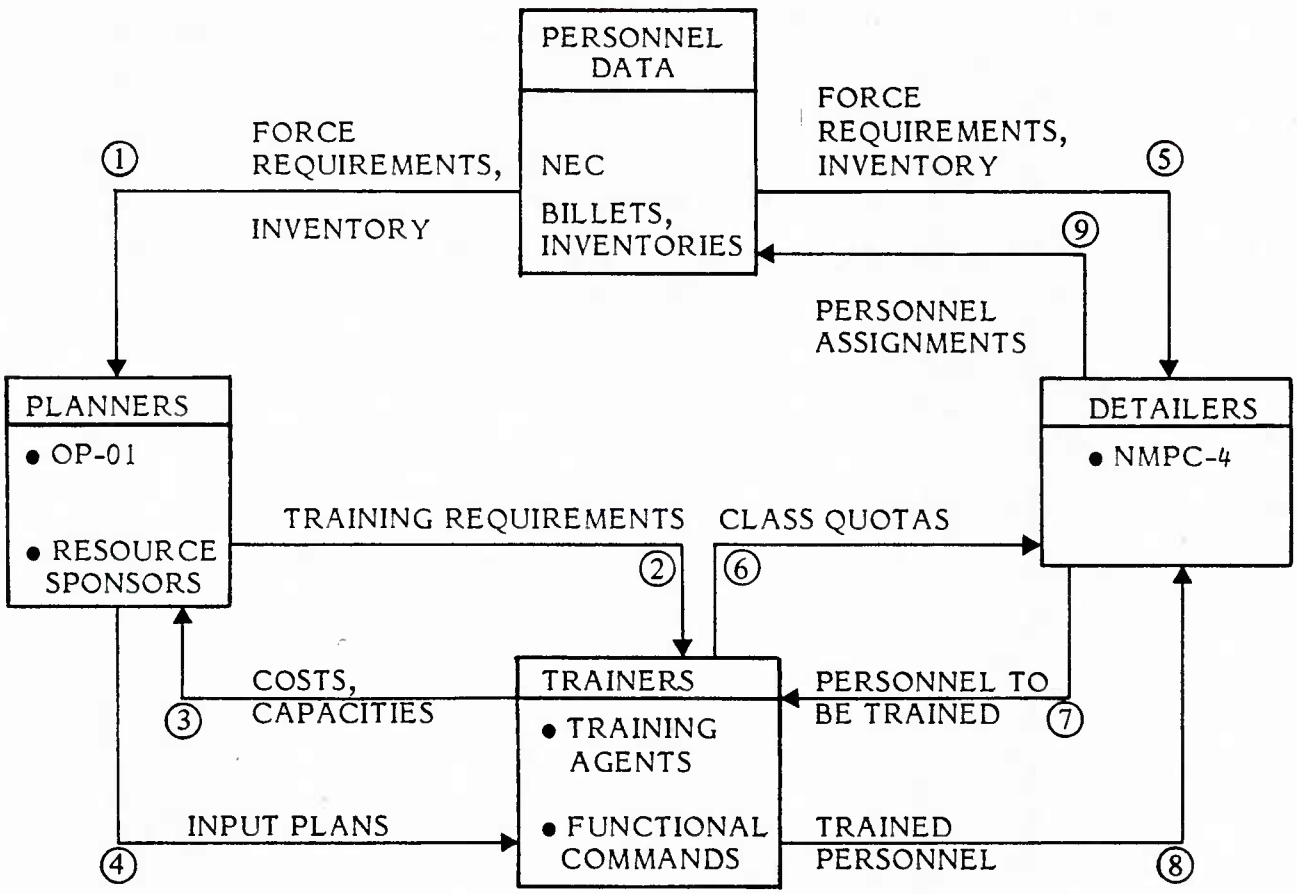

Figure 4. "C" school planning and execution.

PLANNING

This section describes the development of the NEC-related "C" school plan and the role of OP-01 in modifying the plan.

"C" school plans are developed in three major steps. First, a set of initial training requirements are drafted. Next, these requirements are refined to account for detailed information on equipment changes and rating-level inventory trends. Then, the "C" school plan is finalized by reconciling training requirements with school capacities.

Initial "C" School Requirements (CSR)

Figure 5 illustrates the planning portion of the "C" school management process. The first step in planning is to estimate initial "C" school requirements. To do this, billet data are compiled by the Manpower Authorization Branch (OP-121) and forwarded to the Training Policy Programs Branch (OP-112). These data reflect billets for the current year, projected billets for the budget year, and a 5-year planning horizon. The billet data are summarized by primary and secondary NEC.[5] OP-112 combines the primary and secondary NEC reports to estimate total projected authorizations for each NEC and then estimates the training required to fill the authorizations.

Assuming that personnel rotate and must be replaced every 3 years, the OP-112 planner estimates baseline training requirements as one-third the number of projected NEC-specific billets. The planner may increase this baseline estimate to account for anticipated authorization growth or equipment changes that would affect billet authorizations for an NEC. For new equipment, a manual review of the Navy Training Plan (NTP) is made.[6]

Baseline requirements can also be affected by NEC-level manning shortages or overages. The OP-112 planner also receives a report on current inventory by primary and secondary NECs from NMPC-16. Primary and secondary NEC data for inventories are tallied to represent assets and are used to project an FY89 inventory by NEC. The projected inventory is computed as the current inventory plus 85 percent of the projected training in each year prior to FY89. The projected inventory is then compared to authorizations for each NEC. If an NEC is projected to be undermanned in FY89, an arbitrary, planner-defined factor is added to its training requirements estimate. This factor usually is about one-third of the manning deficit. That is, the planner usually targets for a 3-year recovery.

---

[5] The primary NEC on a billet is the first NEC specified on the billet description; the secondary is the second NEC specified. Billets may carry one or two NEC requirements. Likewise, the primary and secondary NECs for personnel inventory are the first and second NECs specified on an individual's EMR. The EMR reports up to five NECs for each member.

[6] The NTP is the principal document stating billet, personnel, military construction, and training resource requirements to support the introduction and operational use of new Navy acquisitions. Resource sponsors are responsible for seeing that an NTP is prepared for new equipment.

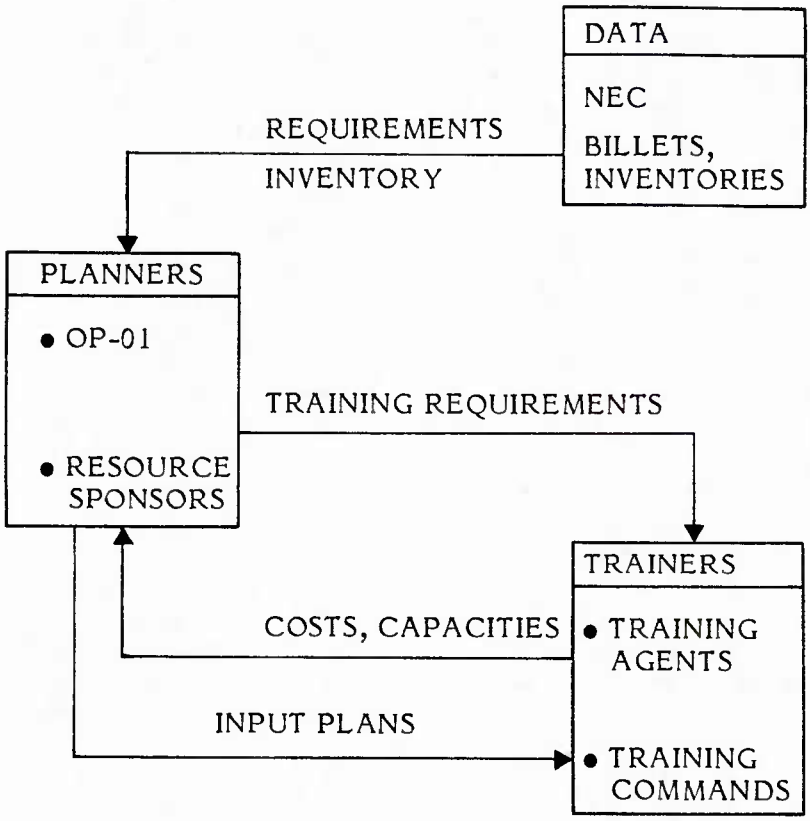

Figure 5. Planning.

Refining Training Requirements

OP-112 sends its projected training requirements to the resource sponsors and Enlisted Community Managers (ECMs) for review. The OP-112 planner chairs training requirements meetings to coordinate resource sponsor and ECM revisions to the initial outyear requirements.

Resource sponsors determine the funding needed to support weapon systems (e.g., ships, aircraft) and their equipment (e.g., communications equipment). New systems or equipment, or changes to existing systems, may add to or reduce the training workload. Resource sponsors adjust the "C" school requirements to reflect expected changes in billets due to system changes.

The ECMs manage enlisted personnel inventories at the rating level. They examine estimates of projected inventories and billets to stay apprised of the manning conditions in each rating. They learn about equipment changes from the resource sponsor and assess the impact of those changes on each of their ratings and, if necessary, on the NECs within these ratings. The ECMs also know about retention and bonus program changes for their ratings. The ECMs refine the "C" school requirements to take into account anticipated changes in rating or NEC-level inventories.

Modifications made during the resource sponsor and ECM review produce the "validated" NEC-related "C" school requirements (CSRs).

The "C" School Plan

Figure 6 shows the steps required to prepare the CSRs, the final school capacities, and the "C" school plan. Upon completion, the CSRs are passed to the training agents and the functional training commands. There, they are reviewed to estimate training costs. Training costs include instructor, training equipment, schoolhouse, and new construction costs. The training agents (usually the Chief of Naval Education and Training; CNET) prepare "resource issues" for coordination by the resource sponsors. A "resource issue" is an imbalance in programmed resources (e.g., unfunded equipment). The resource sponsors work to get training costs funded and return funding results to the training agents, who produce the final training capacities. If valid unfunded requirements exist after the funding process is complete, the resource sponsors must review the issues and the training requirements and decide whether to support the issue.

After these issues are resolved, the Enlisted Training Section (OP-135E), along with the ECMs in the Military Personnel Management Branch (OP-132), prepare final "C" school plans.[7] A plan is derived by reconciling the validated "C" school requirements from OP-112 with schoolhouse capacity constraints from the training agents.[8]

Modifications to the "C" School Plan

During the execution year, OP-135E has the ability to change the "C" school plan. Figure 7 illustrates how a change is accomplished.

Changes to the plan are usually initiated by the ECMs in response to detailers' problems with "C" school availability. When a change is requested, OP-135E will contact the training agent to determine the feasibility of the change, usually within current funding. If the training agent can accommodate the change, OP-135E will modify the "C" school plan and authorize the training agent to make necessary changes at the schoolhouse. If the training agent identifies the need for additional resources, OP-135E goes to the resource sponsors for required funds. However, resources are rarely provided through these means. The requirement that initiated the plan change usually gets carried over to a later year, when it can be programmed for funding.

---

[7] Input plans for the NEC-producing "C" schools and for the NEC-feeder seats are made by OP-135E. Plans for the non-NEC-producing courses in the pipeline may be set up by other organizations since these courses satisfy training requirements other than NEC prerequisite training.

[8] The FY87 "C" school plans were produced by the above method with one notable exception. In July 1985, OP-112 provided the training agents with an updated version of the CSR. These were based on case-by-case program changes that significantly modified the original validated CSR (made available in July 1984). The training agents used both updated CSR and funding results to prepare FY87 training capacities. Thus, the final training capacities were based on funding derived from the first version of CSR but requirements based on a very different version of the CSR.

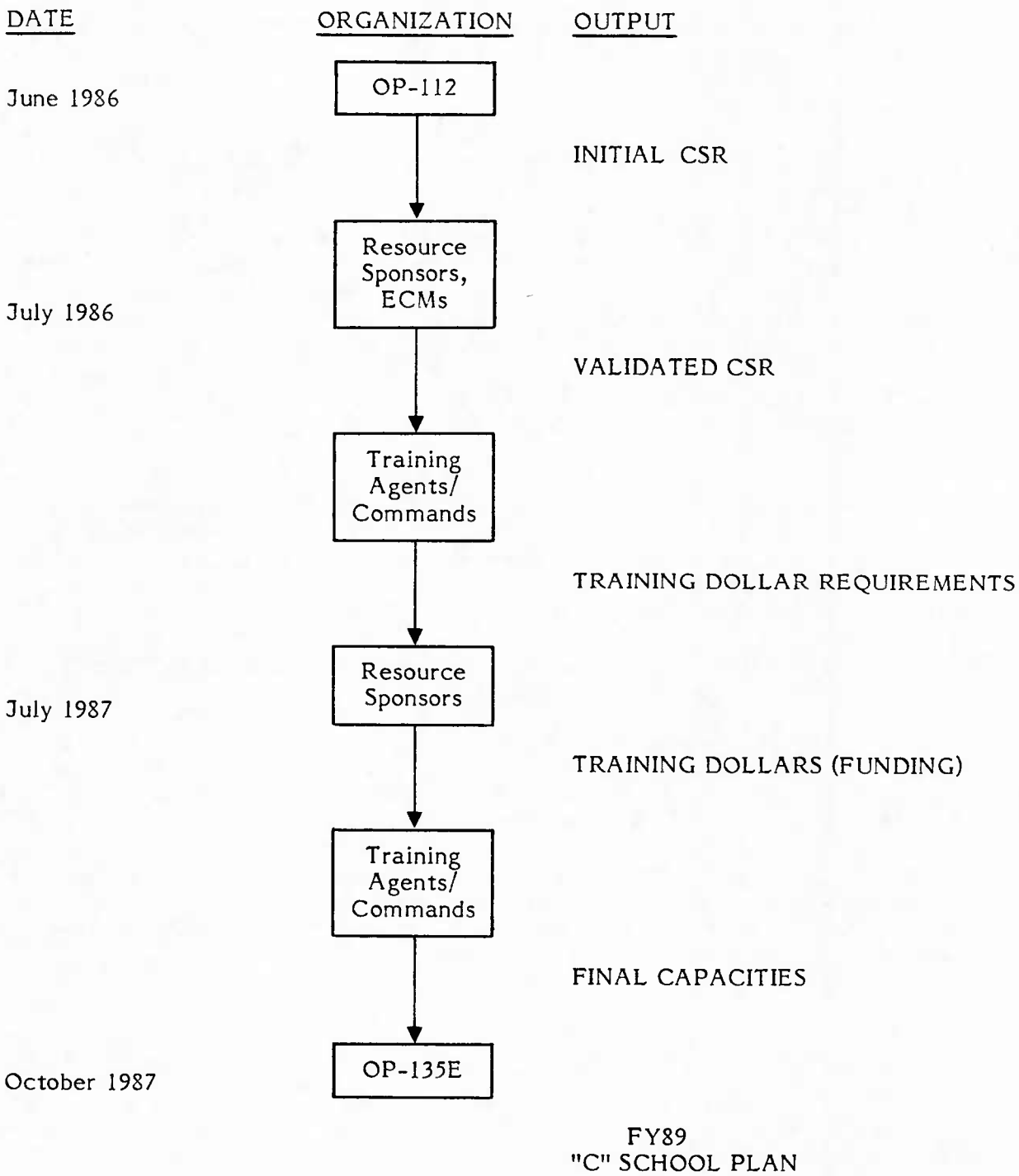

Figure 6. "C" school plan development (FY89 "C" school plan).

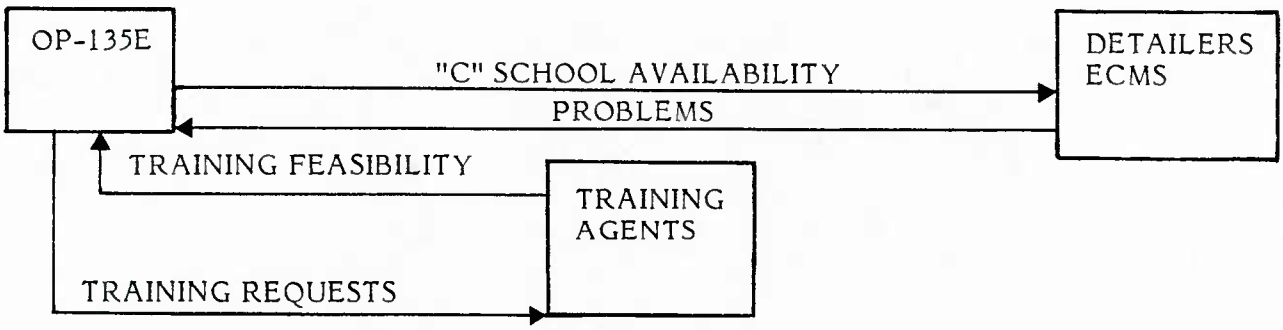

Figure 7. OP-135E changes to the "C" school plan.

SCHOOL QUOTAS AND COURSE SCHEDULING

The "C" school plans are forwarded to the training agents and functional commands. OP-01 input plans reflect "C" school training requirements by NEC. As Figure 8 shows, the training agents identify which schools are an integral part of the training pipeline and translate them into school seats and course schedules. Each training agent is responsible for determining course schedules and controlling the use of their training resources. Class schedules are firm commitments, and school seat availability cannot be arbitrarily cancelled by any other school or agency, except for bonafide reasons such as equipment failure or instructor nonavailability.

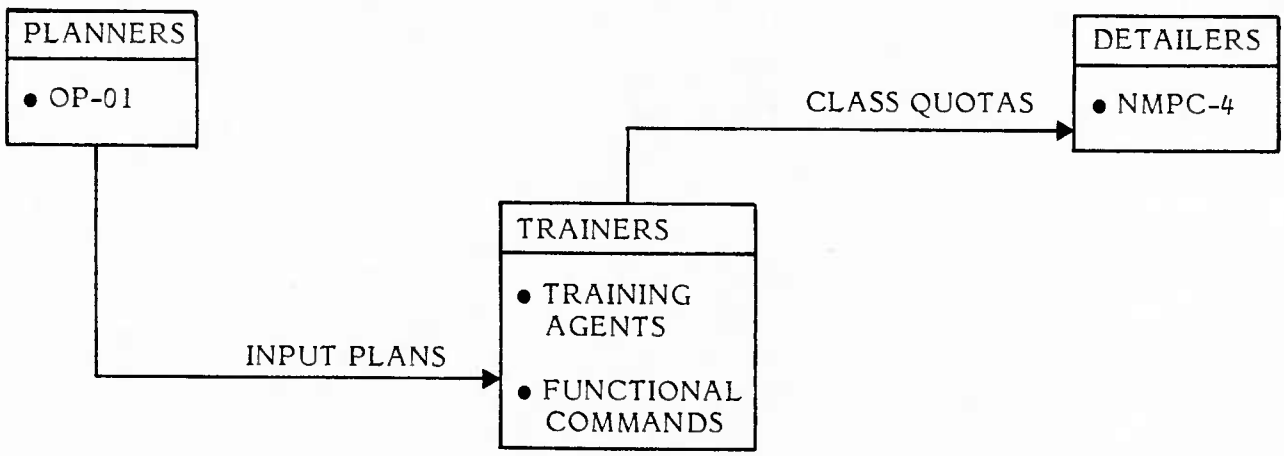

Figure 8. "C" school scheduling.

A "class quota" is a school seat for a particular type of student (e.g., USN, USNR-R, USAF, USMC) in a specific class. Only OP-135E has the authority to approve quota changes that deviate from the OP-01 input plan. CNET Quota Control has the authority to free unused civilian or other service quotas (such as Army or Air Force quotas) for active duty Navy use, or to release unused Navy quotas to the other services.

All information on quotas and class schedules is recorded in the Master Course Reference File (MCRF) of a computerized database known as the Navy Integrated Training Resources and Administration System (NITRAS). (The Management Information and Instructional Systems Activity, MIISA, in Pensacola maintains NITRAS.) For NEC-related courses, the OP-135E NEC-level input plan is converted to a class input plan and loaded into the MCRF. Class schedules are submitted to the MCRF based on that plan. The FY88 input plan will be loaded into the MCRF by November 1987. MCRF reports are distributed to all training activities monthly. Since changes may be made throughout the year, report dates are important.

PLAN EXECUTION

"C" school plan execution translates to personnel assignment. During the assignment process, the detailer must match vacated billets with eligible and available personnel. Personnel are detailed by "distribution community." A distribution community may be defined by a rating or, when critical supplementary skills are required to match billet requirements, by an NEC. For technical enlisted ratings, personnel are often detailed by rating and NEC. If a billet requires a specific NEC and no available individual has that NEC, the detailer will use a school quota to send an available individual to the requisite training course to fill that billet. The school assignment process is pictured in Figure 9.

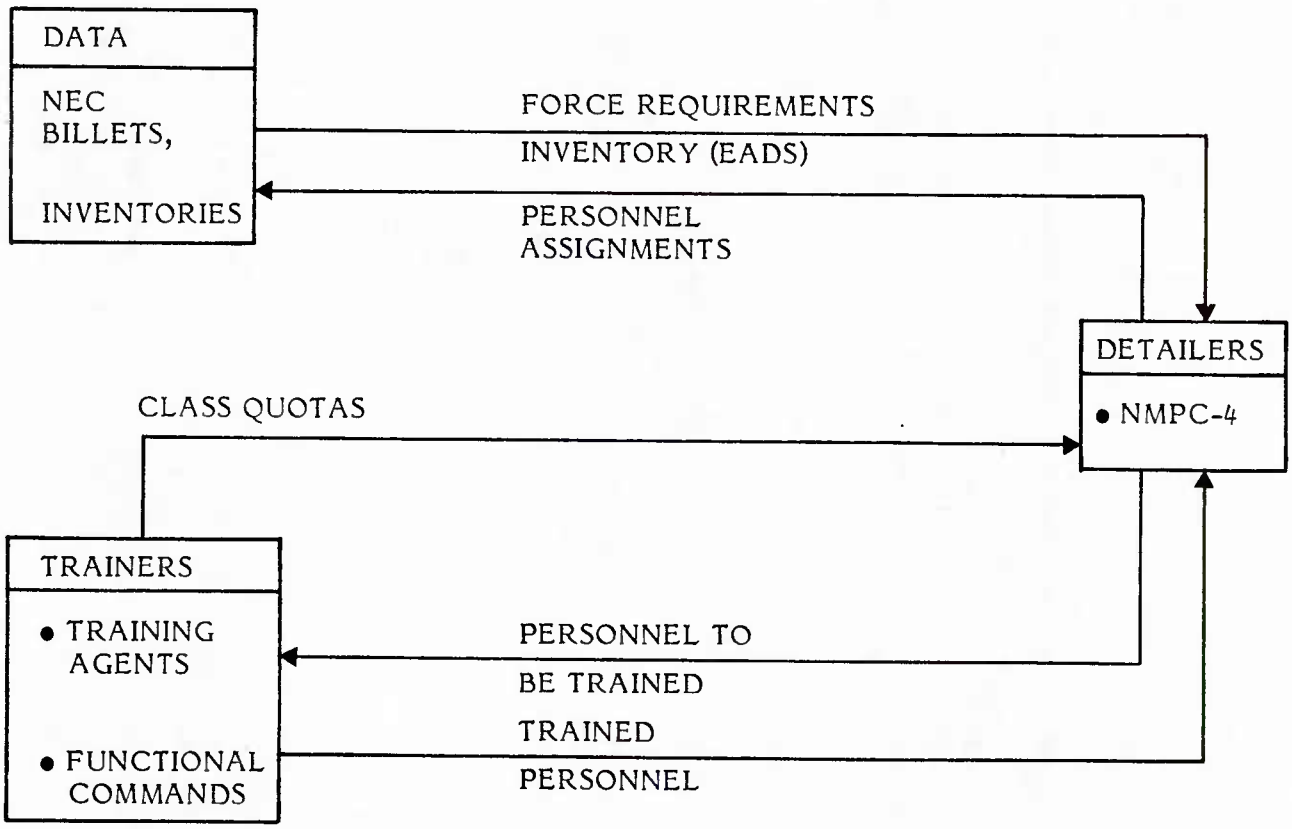

Figure 9. Plan execution.

Billet Requirements (Data)

Requisitions tell detailers which billets must be filled. Requisitions, too, are the product of an involved process described in more detail in the Appendix A. Every 2 weeks, the detailer receives a new requisition listing from the Enlisted Personnel Management Center (EPMAC). The listing is subdivided by rating and within rating into several parts. The listings identify requisitions separately for each Manning Control Authority (MCA; e.g., Atlantic Fleet) and for composites within each MCA. Each portion of the list is prioritized to reflect manning shortages or surpluses, operations schedules, and other considerations. The requisition reflects all NECs required at an activity. Each NEC is paired with a code that indicates the importance of the NEC requirement for the activity.

Available Inventory (Data)

Detailers obtain lists of personnel available for assignment from the Enlisted Assignment Document (EAD), a hard-copy printout of data from an individual's EMR. When an individual's projected rotation date approaches (i.e., a current tour is nearing completion), the detailer starts looking for a billet. The detailer receives EADs monthly for individuals who will be rotating 4 months (from CONUS assignments) to 6 months (from overseas assignments) in the future.

Up to five NECs can be recorded in an individual's EMR. They are reflected on the EAD. Each NEC has an NEC sequence number and the date that it was awarded. The sequence number (ranging from 1 to 8) identifies the priority of the NEC. Sequence numbers for each NEC are provided in the NEC manual. They account for factors such as the training pipeline length and availability. The lowest sequence number has the highest priority. The NECs on the individual's EMR are sorted first by sequence number and then by the date awarded. Although sequence numbers affect the order of NECs on the EMR, detailers do not use them explicitly when making personnel assignments.

The EAD also shows a member's five most recent training courses. If an NEC corresponding to his training history does not appear on the EAD, the detailer is aware that the individual may be qualified for the NEC.

Automated Data Retrieval

The automated Enlisted Assignment Information System (EAIS) will eventually replace the hard-copy requisition listings and EADs. EAIS will provide a common on-line database for detailers containing relevant personnel, billet, and school course information. The detailers will update the information in the database as assignments are made. The phased implementation of EAIS is planned to begin in FY86.

PERSONNEL ASSIGNMENT

Detailers face numerous constraints in the personnel assignment process (Figure 10). Requisitions to be filled and personnel available to fill them must be considered simultaneously. Detailing for specialized NEC skills is especially restrictive because, among other things, training seats and transportation dollars available to training must also be considered.

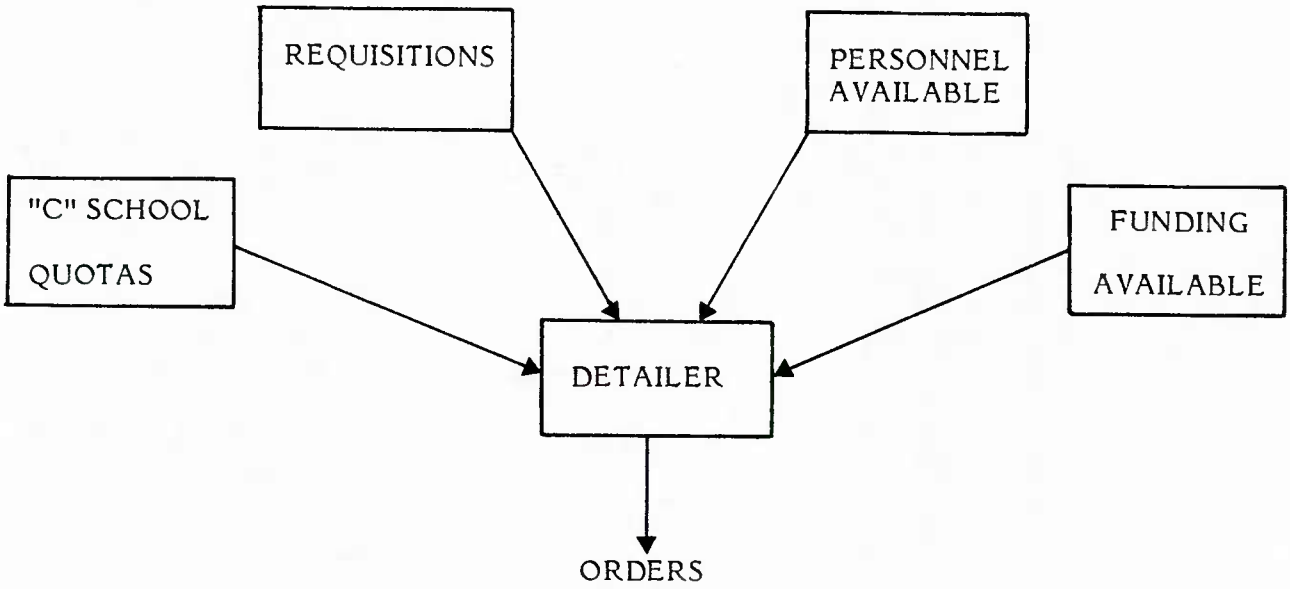

Figure 10. Writing orders to "C" school.

Requisitions and Available Personnel

Detailers typically begin with a requisition and then search for a person to fill it. They must consider the priority of a requisition, its geographic location, and the activity's NEC deficiencies. They consider an available individual's obligated service, overseas suitability, current location, dependent status, gender, current NEC qualifications, dates of NEC awards, and school training courses. If a qualified person is not available to fill the requisition, they will try to send an individual to the requisite training course(s) using a "C" school quota.

Training Seats

The NITRAS Quota Management/Allocation Report provides the detailers with a weekly update on class quotas, convening schedules, and capacities. Training assignments can be made only if sufficient permanent change of station (PCS) dollars or temporary duty under instruction (TEMDUINS) dollars are available. If the training exceeds 20 weeks, then PCS dollars are used to move a member to and from the training site. Otherwise, TEMDUINS dollars will be used to send the member to a training assignment. Detailers prepare an 8" x 5" card for each Navy class quota. When detailers make a training assignment, they fill in the individual's name on a card to note that a quota has been filled. The detailers also record students sent on temporary active duty to NEC-producing training from the Fleet. CNET receives information on all orders written to the schoolhouses.

Instruction 1500.47, Training Quota Management, gives detailers assignment authority over active-duty Navy class quotas. An exception is in the submarine community, where quota assignments have been designated to the schoolhouses for certain NECs. NMPC publishes a list of NEC-related "C" schools for which it releases quota assignment authority to the functional commands. The advantage of detailer quota assignment authority is that individuals' EAOS dates and training prerequisites can be considered when granting quotas to them.

PROBLEMS

There are times when the "C" school training plans do not match training needs. In FY84, 22 percent of the NEC-producing "C" schools trained less than 50 percent of their quotas, and 18 percent of the schools trained more than 110 percent. The discrepancies between "C" school plans and actual use are due to data problems, planning problems, and plan execution problems.

Data Problems

NEC-related inaccuracies on the billet file and on the EMR cause problems for both planners and detailers. Planners rely on reports from these data sources to derive initial "C" school requirements. Detailers depend on these data for information on the type of personnel an activity requires and on the qualifications of available personnel. Figure 11 summarizes the errors that can affect the billet file and the EMR.

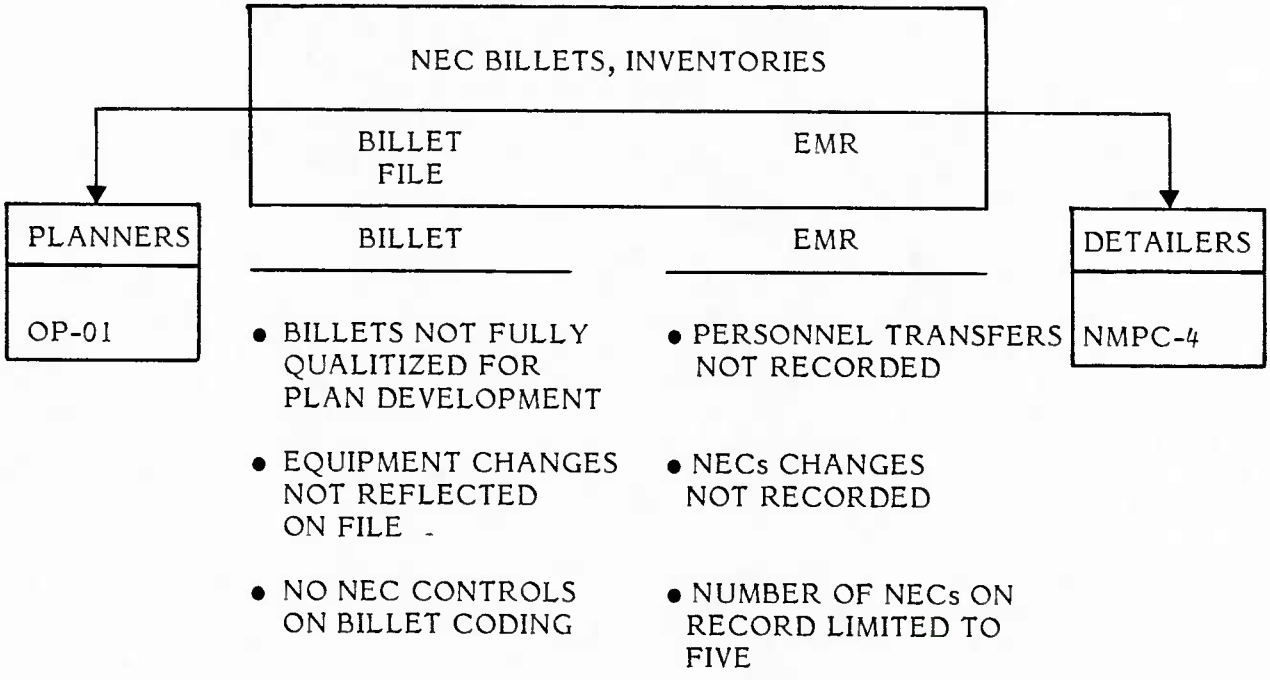

Figure 11. Data problems.

Billet File "Qualitization." Billets reflect authorized strength plus quality (billet grade, rate, and NEC). Billets define (1) the amount and kind of personnel and (2) the distribution of personnel among Navy activities.

Because billets are developed in two steps, "C" school planners may not have complete billet quality information in time to make training plans. During the funding process, activity-level strengths (the total number of billets at each paygrade) are approved. Later, resource sponsors add billet quality to these strengths. The timeline in Figure 12 shows that when the initial FY89 "C" school requirements are developed, only a portion of the FY89 billets have had the quality data added to them.

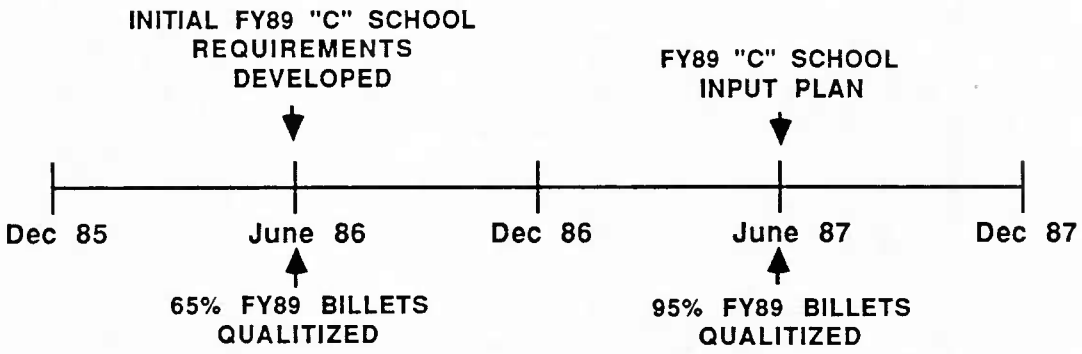

Figure 12. Billet qualitization timeline.

Source: OP-121.

Equipment Changes and the Billet File. Billet strengths and quality descriptions are based on manning documents for activities and major weapon systems. These are "today" documents, not projected requirements. Although OP-120 attempts to stay abreast of ship overhauls and equipment changes, much of this information is not reliably included in the billet description in the NMDAS data file. OP-120 receives updated information on ship overhauls and equipment from three sources: the Fleet Modernization Program (FMP), HARDMAN, and Project Early.[9]

Billet modifications resulting from a complete system acquisition or ship overhaul are more likely to be included in the file than ships' equipment changes. If equipment onboard is stable, then the billet file is accurate. If equipment is removed from the ship, then the billet file overstates requirements. If equipment is added to the ship, then the billet file understates requirements. When a billet requirement changes on a ship, the commanding officer (CO) is responsible for submitting a Manpower Authorization Change Request (OPNAV 1000/4) to OP-121. (OP-121 then coordinates a billet description change with OP-123 on a billet addition.) Even if change requests were consistently submitted, there is an 8-18 month reporting lag for changes in NMDAS.

Accelerated equipment changes or accelerated production schedules also contribute to billet file errors. Systems Commands (SYSCOMS) acquisition schedules give advance clues on potential equipment changes, but these changes are subject to funding constraints and hence may never materialize.

---

[9]The FMP enables the resource sponsors to incorporate future force requirements based on planned weapon system and equipment changes into the billet file. These go into the file as a peacetime-only requirement. The requirements do not change manning documents and are not mobilization requirements. HARDMAN is an information system that contains manpower requirements for new weapon systems. It includes data from the Navy Training Plans. However, no automated link exists between HARDMAN and the billet file. Project Early provides for changes to the manning documents during ship overhauls. A first cut for requirements is made 2 to 3 years prior to overhaul completion. Requirements are continually updated, and by 1 year prior to overhaul completion, they are very close to final ship requirements. Project Early was implemented in summer 1984.

Even when attempts are made to update the billet descriptions to accurately reflect equipment changes, it is too late to affect initial "C" school training requirements. Some reliable information is available for overhaul billet quality changes but not until 1 year before the overhaul is complete--1 year after the training requirements are estimated. Given the 8- to 18-month reporting lag of MPA changes, planners use year-old NEC requirements as a base for their 2-year training projections.

The inaccuracies in the billet file resulting from equipment changes cause erroneous NEC requirements on requisitions. In some technical ratings, as many as 20 percent of the requisitions have incorrect NEC requirements. (LT Mark Jaszkowski, NMPC-406D; personal communication, 1985.) In these cases, the detailer learns about actual requirements directly from an activity.

NEC Coding on the Billet File. The number of NEC-coded billets for similar activities may be different depending on the paperwork an activity has submitted. For example, activity A and activity B may both require two individuals with a given NEC, but the billet file may not accurately reflect this need. Instead, it is possible for activity A to carry two billets with the NEC requirement and for activity B to carry four. If the NEC is 50 percent manned, the detailer will try to man activity A with one person with the NEC and activity B with two. Thus, activity A will be short while activity B will be adequately manned.

The EMR and Personnel Transfers. When a personnel transfer occurs within an activity (e.g., an Aviation Technician transfers from an organizational maintenance work center to an intermediate maintenance work center), the CO is required to submit a personnel diary entry to EPMAC. This triggers an update in the EMR. Diary inputs are applied to the EMR three times per week via NES updates. In many cases, however, diary entries for personnel transfers are not reported in a timely fashion, which causes inaccuracies in the EMR. Because a complete accounting of personnel NECs is performed prior to ship deployment, these updates tend to coincide with deployment cycles.

Updating NEC Qualifications. Data on the EMR may not include complete information on an individual's NECs. Approximately 10 percent to 20 percent of the personnel records do not reflect all the NECs that a member has earned. This happens when NITRAS fails to update the NEC information on the EMR after training or when an OJT award is not reported (Figure 13). In addition, there may be NECs on record that the member can no longer use.

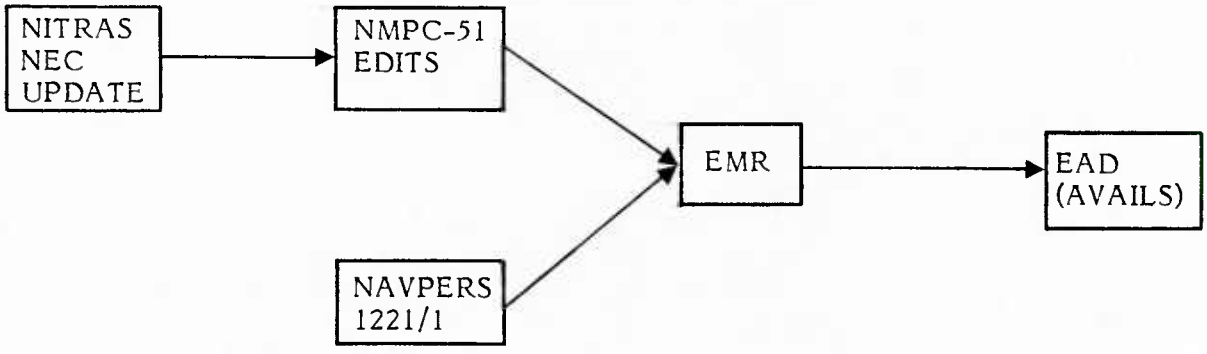

Figure 13. Updating NEC qualifications in the EMR.

When a student graduates from an NEC-producing "C" school, an NEC qualification is added to the NITRAS database (source data for NEC-school EMR updates). NITRAS data on NEC training must then pass through an NMPC-51 edit table before an NEC is added to an EMR. The NMPC-51 edit checks each record for a valid NEC, component NECs required for the new NEC to be awarded, a valid source rating corresponding to the NEC, and a valid paygrade for the NEC. Some individuals are trained without the proper prerequisites, but the edit table will not permit an NEC award update to the EMR. Sometimes NITRAS data are more current than EMR data, and valid NEC awards are rejected because an individual's rating or paygrade change is not yet in the EMR. A Navy Enlisted Classification Change Recommendation (NAVPERS 1221/1) may be submitted by the CO at the individual's activity to correct NEC omissions. However, the omissions are seldom detected and therefore are rarely corrected.

OJT NECs are officially awarded when a member's CO completes a NAVPERS 1221/1. However, these forms are not always submitted to document the NEC award. If the activity does not report the NEC award, requisitions will continue to reflect an NEC deficit and the activity may be sent more personnel to fill the apparent requirement.

EMRs may reflect NECs that members can no longer use. Although most NECs do not expire, in some cases an NEC may require requalification or the member's training may be outdated. For example, two new NECs, 9526 and 9527, 2M Microminiature Repair Technicians, expire without annual recertification. Air Intercept Controllers must remain active in their NECs or lose their qualification after a given time period. To delete an NEC requires the submission of a NAVPERS 1221/1. Deletions are rare. Detailers usually note the date of an NEC award to avoid incorrectly assigning members to an NEC when they are not qualified.

Number of NECs on the EMR. An individual may qualify for more than the five NECs that the EMR can record. This affects the accuracy of a very small percentage of EMRs. When EAIS is implemented, it will store up to 15 NECs in each personnel record.

Planning Problems

The problems faced by "C" school planners in acquiring accurate, timely billet and personnel data are coupled with an inadequate method for projecting NEC-level inventories and training requirements for the 2 to 3 years in advance that is required by the "C" school plan.

Planners' methods for projecting out-year NEC-level inventories are difficult to defend, if not inaccurate. They lack important information on NEC continuation rates, training-plus-OJT NEC qualification rates, school attrition, NEC expiration rates, and effective NEC sea/shore rotation ratios. They also lack information on the pool of potential NEC trainees: members with required training prerequisites who are ready to rotate to sea or to shore duty stations.

Planners do not know how often members with a given NEC are actually assigned to a job requiring that NEC. Currently, training requirements are largely derived by multiplying projected manpower authorizations from the billet file by one-third (see page 7, Initial "C" School Requirements). The "one-third" method assumes an average 3-year tour in all enlisted billets and that NECs are distributed equally in sea and shore billets. However, many tours are shorter than 3 years (e.g., overseas and hardship tours). Also, the sea/shore distributions are skewed for some NECs. For example, NEC 1453

(NAVMACS Shipboard Technician) billets are all at sea, and every ship requires personnel with this NEC. It is necessary to maintain an inventory greater than the total shipboard requirement because some individuals will always be at shore serving in billets not requiring the NEC. The one-third method also assumes that a member will never be assigned to the same NEC more than once. It estimates that training requirements are equal to the number of sailors rotating out of NEC billets and does not account for the detailer's ability to reuse some existing NEC training. Although this occurs for some NECs more than others, members often use an NEC in more than one tour.

Plan Execution Problems

Data inaccuracies on the billet file and the EMR hinder personnel assignment largely because they are passed to requisitions. There are two additional problems faced by detailers in assigning personnel to requisitions with NEC requirements. First, detailers cannot always use or reuse an individual's NEC qualification. Second, detailers may not be able to send personnel to training to fill an NEC requisition.

Reusing NECs. An individual available for assignment may be qualified with an NEC awarded through some previous training. If so, the detailer has an incentive to assign the member to this NEC, that is, to reuse the NEC. By reusing the NEC, the detailer preserves a quota resource for another available member. However, it is not always possible for the detailer to assign members to an activity requiring one of their NECs. Reasons for this include the following:

- Sea-Shore Rotation
  Some NECs are sea intensive. When members holding these NECs rotate to shore, they are assigned to billets requiring different NECs.

- Co-location of Spouses
  Detailers attempt to put spouses at the same geographic location, but activities at that location may not require any of the member's existing NECs.

- High-Priority Billets
  High-priority billets, such as recruiter and recruit company commander, are filled by members in all rates and NECs. During these assignments, it is likely that members will not be using any of their NECs.

Training to fill a requisition. Detailers cannot always train a member to fill an NEC requisition. Reasons for this include the following:

- Unavailability of School Seats
  For example, if a course convenes only three times in a year, and many commands' NEC requirements need to be filled simultaneously, the schoolhouses may be full at that time.

- Manning Shortages
  If there is an inventory shortage in a rating or in an NEC, personnel may not be available for training. The training may require several weeks, and commands often cannot spare inventory for that length of time.

- Limited PCS Dollars
  School convening schedules may be spread across the year, but PCS dollars may not be available at the end of the year to send a rotating member to en route training.

CONCLUSIONS AND RECOMMENDATIONS

"C" school planning and plan execution processes are directly and adversely affected by NEC-level data inaccuracies in the NMDAS billet file and in the EMR. In addition, the current planning method is largely a manual process. Projection of training requirements is inconsistent and indefensible. It fails to account for several important factors, such as school capacities and attrition, NEC utilization, and personnel continuation behavior.

An automated "C" school planning system would be a step towards solving some of the planners' problems.

The advantages of an automated "C" school planning system would be:

- Standard and consistent use of data from multiple sources.
- An inventory projection model specifically tailored for "C" school planners.
- Automated planning feedback.
- A streamlined, computer-based methodology for producing a defensible "C" school plan.

The major components of the system should be a planning database, an information retrieval system, and a "C" school planning model.

Figure 14 illustrates such a system. The planning database would be the central component of the "C" school planning system and would supply information to other system components. The database would include information on authorizations, inventories, school capacities, school utilization, NEC utilization, and historical "C" school plans. Billets, inventories, and school capacities are the building blocks for the "C" school plan. School utilization would provide the history of school quota fill. NEC utilization would provide the pattern of NEC use in assignments. Finally, historical "C" school plans would give the planner the ability to track the plans over time and compare them to historical billets, inventories, or feedback measures. Raw input data and historical and projected data from the planning database would be available via the information retrieval component.

The "C" school planning models shown in Figure 14 perform two major functions. One model builds the initial "C" school requirements, while a second model builds the final "C" school plan. CSRs are derived through a comparison of projected billets to projected inventory. These CSRs can be modified through user overrides or policy inputs to respond to, for example, historical course utilization or obligated training. The CSP model constrains training requirements by "C" school capacities to produce a recommended plan.

The "C" School Planning System would provide standardized, quantitative procedures for planning "C" school requirements. The system should be developed for use by training managers, enlisted community managers, and strength managers. It should require no computational experience to use.

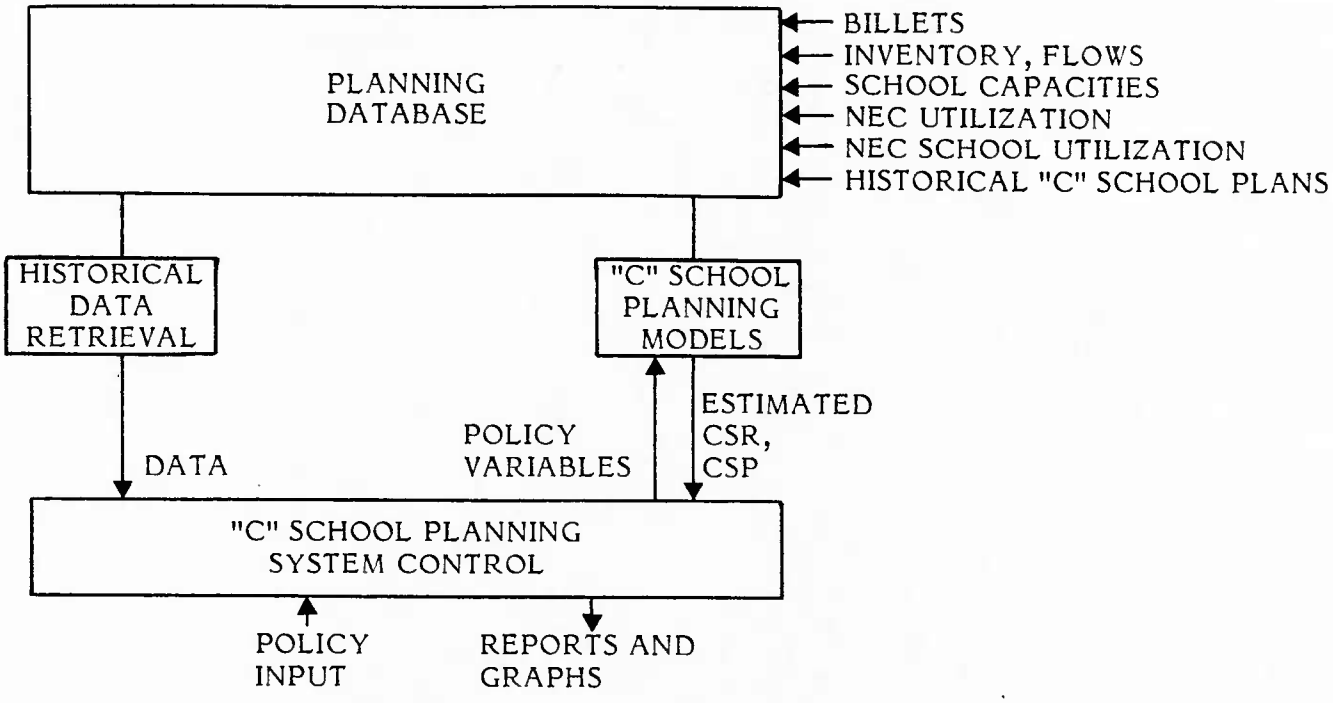

Figure 14. Components of a "C" school planning system.

REFERENCES

Angier, B. (1985, March). Concept paper on advanced skill training (CNA Memo 85-0510). Alexandria, VA: Center for Naval Analyses.

Ganeshan, J., & Rowe, M. (1987, March). An investigation of NEC utilization (NPRDC TR 87-18). San Diego: Navy Personnel Research and Development Center.

Quester, A., & Corliss, G. (1986, April). The Navy enlisted classifications (NECs): A history (CRM Res. Memo. 86-84). Alexandria, VA: Center for Naval Analyses.

Quester, A., Byrnes, P., Corliss, G., Dorsey, C., Hill, J., & Schoeck, S. (1986, April). Specialized skill training for active duty Navy personnel: A history (Research Memorandum 86-90). Alexandria, VA: Center for Naval Analyses.

U.S. Department of the Navy. (1986, January). Manual of Navy enlisted manpower and personnel classification and occupational standards: Section 2. Navy enlisted classifications (NAVPERS 18068D). Washington, DC: Author.

U.S. General Accounting Office. (1985, September). Report to the Assistant Secretary of the Navy for Manpower and Reserve Affairs: Observations on the Navy's process for determining annual enrollment requirements (GAO/NSAID-85-186). Washington, DC: Author.

APPENDIX

REQUISITIONS

REQUISITIONS

Detailers know what billets have to be filled from requisitions. These are generated through an especially involved process. A Ship Manning Document (SMD), Squadron Manning Document (SQMD), or Shore Manning Document (SHMD) specifies total personnel requirements for an activity. Manpower authorizations (MPA), the number of billets that resource sponsors buy and that Congress is willing to fund, are based on the data in these documents. The manpower authorizations are linked with the enlisted inventory on an aggregate scale. Those billets that can be filled with the inventory at hand then generate requisitions.

To explain exactly what a requisition represents, it is necessary to explain how the link between authorizations and inventory is achieved. An extract from the NMDAS billet file and an extract from the Enlisted Master Record (EMR) are the billet and inventory inputs to the Enlisted Distribution Projections System (EDPROJ). EDPROJ produces two estimates. First, it gives a projection of planned onboard personnel for a month, usually 7 months in the future. This is called the P7 baseline strength. Second, EDPROJ produces a projection of rotatable assets--personnel completing training or with an approaching rotation or end of active obligated service date. EDPROJ then makes an aggregate allocation of rotatable personnel to billets, which targets a number of policy objectives: distributable community balance, 100 percent manning of Chief of Naval Operations priority 1 and 2 billets, sea/shore balance using accessions, and a balanced distribution of nonpriority billets. If manning is less than or greater than 100 percent, the EDPROJ allocation indicates the distribution of the manning shortfall or surplus.

The EDPROJ projections and allocations are made to each Manning Control Authority (MCA) and to shore, sea surface/air, and sea submarine composites. The MCAs are Chief of Naval Personnel, Commander In Chief, Pacific Fleet, and Commander In Chief, Atlantic Fleet. The P7 baseline strength plus allocations form the POB7 strength for each MCA and composite. The POB7 strength is the basis for each MCA's aggregated Navy Manning Plan (NMP). EDPROJ composite allocations are apportioned to the activity level, and differences between POB7 and P7 NMP (vacancies) generate requisitions in the Enlisted Personnel Requisition System (EPRES).

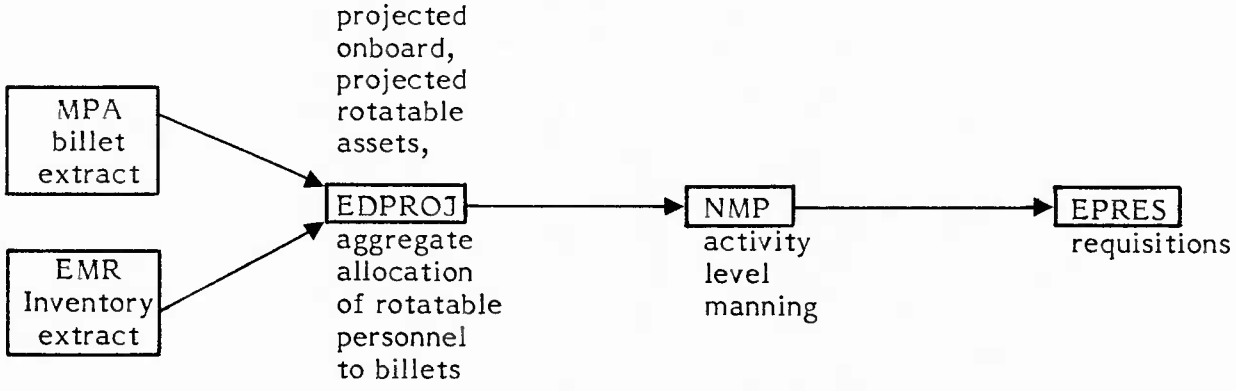

Figure A-1. Generating requisitions.

DISTRIBUTION LIST

Assistant Secretary of the Navy (Manpower and Reserve Affairs) (OASN) (M&RA)
Deputy Assistant Secretary of the Navy (Manpower)
Deputy Chief of Naval Operations (MP&T) (OP-01)
Assistant for MPT Research and Development and Studies (OP-01B7)
Director, Total Force Training and Education (OP-11)
Head, Training and Education Assessment (OP-11H)
Director, Total Force Programming/Manpower Division (OP-12)
Director, Military Personnel Policy Division (OP-13)
Head, Policy Coordination (OP-132H1)
Head, Enlisted Strength Planner (OP-135C)
Assistant for Manpower, Personnel, and Training (OP-987H)
Commander, Naval Military Personnel Command (NMPC-00/PERS-1)
Director, Distribution Management and Control Division (NMPC-46)
Director, Distribution Supply Division (NMPC-47)
Chief of Naval Technical Training (Code 00)
Superintendent, Naval Postgraduate School
Director of Research, U.S. Naval Academy
Institute for Defense Analyses, Science and Technology Division
Center for Naval Analyses
Defense Technical Information Center (DTIC) (2)

SUPERINTENDENT
NAVAL POSTGRADUATE SCHOOL
MONTEREY, CA 93943-5100

0142